

SEQUENCE LISTING

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 MORBACH, Susanne
 KRAMER, Reinhard

<120> NUCLEOTIDE SEQUENCES CODING FOR THE OtsA PROTEIN

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| caccgcaaag aagaccacaa agaagtctta agccggatct tat atg gat gat tcc | 895 |
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| aat agc ttt gta gtt gtt gct aac cgt ctg cca gtg gat atg act gtc | 943 |
| Asn Ser Phe Val Val Val Ala Asn Arg Leu Pro Val Asp Met Thr Val | |
| 5 10 15 20 | |
| cac cca gat ggt agc tat agc atc tcc ccc agc ccc ggt ggc ctt gtc | 991 |
| His Pro Asp Gly Ser Tyr Ser Ile Ser Pro Ser Pro Gly Gly Leu Val | |
| 25 30 35 | |
| acg ggg ctt tcc ccc gtt ctg gaa caa cat cgt gga tgt tgg gtc gga | 1039 |
| Thr Gly Leu Ser Pro Val Leu Glu Gln His Arg Gly Cys Trp Val Gly | |
| 40 45 50 | |
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| Trp Pro Gly Thr Val Asp Val Ala Pro Glu Pro Phe Arg Thr Asp Thr | |
| 55 60 65 | |
| ggt gtt ttg ctg cac cct gtt gtc ctc act gca agt gac tat gaa ggc | 1135 |
| Gly Val Leu Leu His Pro Val Val Leu Thr Ala Ser Asp Tyr Glu Gly | |
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| Phe Tyr Glu Gly Phe Ser Asn Ala Thr Leu Trp Pro Leu Phe His Asp | |
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| Leu Ile Val Thr Pro Val Tyr Asn Thr Asp Trp Trp His Ala Phe Arg | |
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| Glu Val Asn Leu Lys Phe Ala Glu Ala Val Ser Gln Val Ala Ala His | |
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| ggt gcc act gtg tgg gtg cag gac tat cag ctg ttg ctg gtt cct ggc | 1327 |
| Gly Ala Thr Val Trp Val Gln Asp Tyr Gln Leu Leu Leu Val Pro Gly | |
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| Ile Leu Arg Gln Met Arg Pro Asp Leu Lys Ile Gly Phe Phe Leu His | |
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| Ile Pro Phe Pro Ser Pro Asp Leu Phe Arg Gln Leu Pro Trp Arg Glu | |
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| gag att gtt cga ggc atg ctg ggc gca gat ttg gtg gga ttc cat ttg | 1471 |
| Glu Ile Val Arg Gly Met Leu Gly Ala Asp Leu Val Gly Phe His Leu | |
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|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|--|
| Val | Gln | Asn | Ala | Glu | Asn | Phe | Leu | Ala | Leu | Thr | Gln | Gln | Val | Ala | Gly | | |
| | | | 200 | | | | | 205 | | | | | 210 | | | | |
| act | gcc | ggg | tct | cat | gtg | ggg | cag | ccg | gac | acc | ttg | cag | gtc | agt | ggg | 1567 | |
| Thr | Ala | Gly | Ser | His | Val | Gly | Gln | Pro | Asp | Thr | Leu | Gln | Val | Ser | Gly | | |
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| gaa | gca | ttg | gtg | cgt | gag | att | ggc | gct | cat | gtt | gaa | acc | gct | gac | gga | 1615 | |
| Glu | Ala | Leu | Val | Arg | Glu | Ile | Gly | Ala | His | Val | Glu | Thr | Ala | Asp | Gly | | |
| | | 230 | | | | 235 | | | | | 240 | | | | | | |
| agg | cga | gtt | agc | gtc | ggg | gcg | ttc | ccg | atc | tcg | att | gat | gtt | gaa | atg | 1663 | |
| Arg | Arg | Val | Ser | Val | Gly | Ala | Phe | Pro | Ile | Ser | Ile | Asp | Val | Glu | Met | | |
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| Phe | Gly | Glu | Ala | Ser | Lys | Ser | Ala | Val | Leu | Asp | Leu | Leu | Lys | Thr | Leu | | |
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| gac | gag | ccg | gaa | acc | gta | ttc | ctg | ggc | gtt | gac | cga | ctg | gac | tac | acc | 1759 | |
| Asp | Glu | Pro | Glu | Thr | Val | Phe | Leu | Gly | Val | Asp | Arg | Leu | Asp | Tyr | Thr | | |
| | | | 280 | | | | | 285 | | | | | 290 | | | | |
| aag | ggc | att | ttg | cag | cgc | ctg | ctt | gcg | ttt | gag | gaa | ctg | ctg | gaa | tcc | 1807 | |
| Lys | Gly | Ile | Leu | Gln | Arg | Leu | Leu | Ala | Phe | Glu | Glu | Leu | Leu | Glu | Ser | | |
| | | 295 | | | | 300 | | | | | | 305 | | | | | |
| ggc | gcg | ttg | gag | gcc | gac | aaa | gct | gtg | ttg | ctg | cag | gtc | gcg | acg | cct | 1855 | |
| Gly | Ala | Leu | Glu | Ala | Asp | Lys | Ala | Val | Leu | Leu | Gln | Val | Ala | Thr | Pro | | |
| | | 310 | | | | 315 | | | | | 320 | | | | | | |
| tcg | cgt | gag | cgc | att | gat | cac | tat | cgt | gtg | tcg | cgt | tcg | cag | gtc | gag | 1903 | |
| Ser | Arg | Glu | Arg | Ile | Asp | His | Tyr | Arg | Val | Ser | Arg | Ser | Gln | Val | Glu | | |
| | | 325 | | | 330 | | | | | 335 | | | | | 340 | | |
| gaa | gcc | gtc | ggc | cgt | atc | aat | ggg | cgt | ttc | ggg | cgc | atg | ggg | cgt | ccc | 1951 | |
| Glu | Ala | Val | Gly | Arg | Ile | Asn | Gly | Arg | Phe | Gly | Arg | Met | Gly | Arg | Pro | | |
| | | | | 345 | | | | 350 | | | | | 355 | | | | |
| gtg | gtg | cat | tat | cta | cac | agg | tca | ttg | agc | aaa | aat | gat | ctc | cag | gtg | 1999 | |
| Val | Val | His | Tyr | Leu | His | Arg | Ser | Leu | Ser | Lys | Asn | Asp | Leu | Gln | Val | | |
| | | | 360 | | | | | 365 | | | | | 370 | | | | |
| ctg | tat | acc | gca | gcc | gat | gtc | atg | ctg | gtt | acg | cct | ttt | aaa | gac | ggg | 2047 | |
| Leu | Tyr | Thr | Ala | Ala | Asp | Val | Met | Leu | Val | Thr | Pro | Phe | Lys | Asp | Gly | | |
| | | 375 | | | | | 380 | | | | | 385 | | | | | |
| atg | aac | ttg | gtg | gct | aaa | gaa | ttc | gtg | gcc | aac | cac | cgc | gac | ggc | act | 2095 | |
| Met | Asn | Leu | Val | Ala | Lys | Glu | Phe | Val | Ala | Asn | His | Arg | Asp | Gly | Thr | | |
| | | 390 | | | | 395 | | | | | 400 | | | | | | |
| ggg | gct | ttg | gtg | ctg | tcc | gaa | ttt | gcc | ggc | gcg | gcc | act | gag | ctg | acc | 2143 | |
| Gly | Ala | Leu | Val | Leu | Ser | Glu | Phe | Ala | Gly | Ala | Ala | Thr | Glu | Leu | Thr | | |
| | | 405 | | | 410 | | | | 415 | | | | | 420 | | | |
| ggg | gcg | tat | tta | tgc | aac | cca | ttt | gat | gtg | gaa | tcc | atc | aaa | cgg | caa | 2191 | |
| Gly | Ala | Tyr | Leu | Cys | Asn | Pro | Phe | Asp | Val | Glu | Ser | Ile | Lys | Arg | Gln | | |

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| Met Val Ala Ala Val His Asp Leu Lys His Asn Pro Glu Ser Ala Ala | | | |
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| acg cga atg aaa acg aac agc gag cag gtc tat acc cac gac gtc aac | | | 2287 |
| Thr Arg Met Lys Thr Asn Ser Glu Gln Val Tyr Thr His Asp Val Asn | | | |
| 455 | 460 | 465 | |
| gtg tgg gct aat agt ttc ctg gat tgt ttg gca cag tcg gga gaa aac | | | 2335 |
| Val Trp Ala Asn Ser Phe Leu Asp Cys Leu Ala Gln Ser Gly Glu Asn | | | |
| 470 | 475 | 480 | |
| tca tgaaccgcgc acgaatcgcg accataggcg ttcttccgct tgctttactg | | | 2388 |
| Ser | | | |
| 485 | | | |
| ctggcgctcct gtgggttcaga caccgtggaa atgacagatt ccacctgggtt ggtgaccaat | | | 2448 |
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| gtgtccgatt ttgatggaac catcgcagga tttagcaagg acgcttaciaa cgttcctatc | | | 2988 |
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| | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Asp | Met | Thr | Val | His | Pro | Asp | Gly | Ser | Tyr | Ser | Ile | Ser | Pro | Ser | Pro |
| | | | 20 | | | | | 25 | | | | | 30 | | |

Gly Gly Leu Val Thr Gly Leu Ser Pro Val Leu Glu Gln His Arg Gly

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|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Cys | Trp | Val | Gly | Trp | Pro | Gly | Thr | Val | Asp | Val | Ala | Pro | Glu | Pro | Phe |
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| Arg | Thr | Asp | Thr | Gly | Val | Leu | Leu | His | Pro | Val | Val | Leu | Thr | Ala | Ser |
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| Asp | Tyr | Glu | Gly | Phe | Tyr | Glu | Gly | Phe | Ser | Asn | Ala | Thr | Leu | Trp | Pro |
| | | | | 85 | | | | | 90 | | | | | 95 | |
| Leu | Phe | His | Asp | Leu | Ile | Val | Thr | Pro | Val | Tyr | Asn | Thr | Asp | Trp | Trp |
| | | | 100 | | | | | 105 | | | | | 110 | | |
| His | Ala | Phe | Arg | Glu | Val | Asn | Leu | Lys | Phe | Ala | Glu | Ala | Val | Ser | Gln |
| | | 115 | | | | | 120 | | | | | 125 | | | |
| Val | Ala | Ala | His | Gly | Ala | Thr | Val | Trp | Val | Gln | Asp | Tyr | Gln | Leu | Leu |
| | 130 | | | | | 135 | | | | | 140 | | | | |
| Leu | Val | Pro | Gly | Ile | Leu | Arg | Gln | Met | Arg | Pro | Asp | Leu | Lys | Ile | Gly |
| 145 | | | | | 150 | | | | | 155 | | | | | 160 |
| Phe | Phe | Leu | His | Ile | Pro | Phe | Pro | Ser | Pro | Asp | Leu | Phe | Arg | Gln | Leu |
| | | | 165 | | | | | | 170 | | | | | 175 | |
| Pro | Trp | Arg | Glu | Glu | Ile | Val | Arg | Gly | Met | Leu | Gly | Ala | Asp | Leu | Val |
| | | | 180 | | | | | 185 | | | | | 190 | | |
| Gly | Phe | His | Leu | Val | Gln | Asn | Ala | Glu | Asn | Phe | Leu | Ala | Leu | Thr | Gln |
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| Gln | Val | Ala | Gly | Thr | Ala | Gly | Ser | His | Val | Gly | Gln | Pro | Asp | Thr | Leu |
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| Gln | Val | Ser | Gly | Glu | Ala | Leu | Val | Arg | Glu | Ile | Gly | Ala | His | Val | Glu |
| 225 | | | | | 230 | | | | | 235 | | | | | 240 |
| Thr | Ala | Asp | Gly | Arg | Arg | Val | Ser | Val | Gly | Ala | Phe | Pro | Ile | Ser | Ile |
| | | | | 245 | | | | | 250 | | | | | 255 | |
| Asp | Val | Glu | Met | Phe | Gly | Glu | Ala | Ser | Lys | Ser | Ala | Val | Leu | Asp | Leu |
| | | | 260 | | | | | 265 | | | | | 270 | | |

Leu Lys Thr Leu Asp Glu Pro Glu Thr Val Phe Leu Gly Val Asp Arg
275 280 285

Leu Asp Tyr Thr Lys Gly Ile Leu Gln Arg Leu Leu Ala Phe Glu Glu
290 295 300

Leu Leu Glu Ser Gly Ala Leu Glu Ala Asp Lys Ala Val Leu Leu Gln
305 310 315 320

Val Ala Thr Pro Ser Arg Glu Arg Ile Asp His Tyr Arg Val Ser Arg
325 330 335

Ser Gln Val Glu Glu Ala Val Gly Arg Ile Asn Gly Arg Phe Gly Arg
340 345 350

Met Gly Arg Pro Val Val His Tyr Leu His Arg Ser Leu Ser Lys Asn
355 360 365

Asp Leu Gln Val Leu Tyr Thr Ala Ala Asp Val Met Leu Val Thr Pro
370 375 380

Phe Lys Asp Gly Met Asn Leu Val Ala Lys Glu Phe Val Ala Asn His
385 390 395 400

Arg Asp Gly Thr Gly Ala Leu Val Leu Ser Glu Phe Ala Gly Ala Ala
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Thr Glu Leu Thr Gly Ala Tyr Leu Cys Asn Pro Phe Asp Val Glu Ser
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Ile Lys Arg Gln Met Val Ala Ala Val His Asp Leu Lys His Asn Pro
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Glu Ser Ala Ala Thr Arg Met Lys Thr Asn Ser Glu Gln Val Tyr Thr
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